

WHAT IS CLAIMED IS:

1. A camera comprising:

a photographing optical system which forms
an optical image of an object;

5 a photoelectric conversion element which converts
the optical image into an electric signal;

an optical element arranged between the
photographing optical system and the photoelectric
conversion element; and

10 vibration means which vibrates the optical element
first at one of at least two frequencies and then at
the other frequency, said frequencies being close to
resonance frequencies.

2. The camera according to claim 1, wherein the
15 vibration means vibrates the optical element first at a
low-order resonance frequency and then at a high-order
resonance frequency.

3. The camera according to claim 1, wherein
the vibration means vibrates the optical first at a
20 high-order resonance frequency and then at a low-order
resonance frequency.

4. A camera comprising:

a photographing optical system which forms
an optical image of an object;

25 an imaging element which converts the optical
image into an electric signal;

a dust filter arranged between the photographing

optical system and the imaging element;

a piezoelectric element which vibrates the dust filter;

5 a drive circuit which drives the piezoelectric element; and

a control circuit which outputs control signals for driving and controlling the drive circuit,

wherein the control circuit first outputs a control signal for causing the dust filter to undergo a low-order resonance vibration and then a control signal for causing the dust filter to undergo a high-order resonance vibration.

5. A camera comprising:

15 a photographing optical system which forms an optical image of an object;

an imaging element which converts the optical image into an electric signal;

a dust filter arranged between the photographing optical system and the imaging element;

20 a piezoelectric element which vibrates the dust filter;

a drive circuit which drives the piezoelectric element; and

25 a control circuit which outputs control signals for driving and controlling the drive circuit,

wherein the control circuit first outputs a control signal for causing the dust filter to undergo

a high-order resonance vibration and then a control signal for causing the dust filter to undergo a low-order resonance vibration.

5 6. The camera according to claim 4, wherein the low-order resonance vibration is primary vibration having one node, and the high-order resonance vibration is secondary vibration having two nodes.

10 7. The camera according to claim 5, wherein the low-order resonance vibration is primary vibration having one node, and the high-order resonance vibration is secondary vibration having two nodes.

15 8. A camera comprising:
a photographing optical system which forms an optical image of an object;
imaging means which converts the optical image into an electric signal;
filter means arranged between the photographing optical system and the imaging means;
vibration means which vibrates the filter means at frequencies close to resonance frequencies of the filter means; and
control means which controls at least the vibration means,

20 wherein the control means controls the vibration means such that the order of vibration of the filter means is changed, either increasing or decreasing.

9. A camera comprising:

a photographing optical system which forms
an optical image of an object;

imaging means which converts the optical image
into an electric signal;

5 an optical element arranged between the
photographing optical system and the imaging means;

vibration means which causes the optical element
to undergo standing-wave vibration,

 wherein vibration means vibrates the optical
10 element such that the number of vibration nodes changes
with time.

10. The camera according to claim 9, wherein the
vibration means vibrates the optical element such that
the number of vibration nodes increases with time.

15 11. The camera according to claim 9, wherein the
vibration means vibrates the optical element such that
the number of vibration nodes decreases with time.

12. A camera in which an optical image of
an object is formed on a light-receiving surface of
20 an imaging element, via a photographing optical system,

 wherein a dust filter is arranged in front of
the imaging element, the dust filter is vibrated,
sequentially at frequencies close to the resonance
frequencies of the dust filter, thereby to remove dust
25 and the like from a surface of the dust filter.